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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,600	08/01/2003	John F. McEntee	10010116-1	4325

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EXAMINER	
MOSS, KERI A	
ART UNIT	**PAPER NUMBER**
1743	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/632,600	MCENTEE ET AL.	
	Examiner	Art Unit	
	Keri A. Moss	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' amendment filed November 27, 2006 is hereby acknowledged. Claims 1-39 are pending.

Response to Amendment

2. Rejection of claim 20 under 35 USC 112, 2nd paragraph has been withdrawn in light of applicant's amendment.

3. Rejections under 35 USC 102 as anticipated by Scheerder, Vernon and Lin have been withdrawn in light of applicant's amendments and arguments.

4. Rejections under 35 USC 103 in view of Ronay, Miller, Taylor and Vernon, Dalton and Rupe have been maintained but modified in light of applicant's amendments.

5. Rejection under Kodera (JP 58048682 A) has been added.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims **1-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (USP 5,418,136) in view of Ronay (USP 5,968,280). With respect to claims 12-13 and 30-36, Miller discloses a method for producing a biopolymeric array comprising modifying the substrate (column 57 lines 3-7) and producing an array of probes on the modified substrate (column 29 line 28 – column 30 line 8). Miller teaches producing the

array on glass (column 4 line 18- column 5 line 9) that is laser-scribed (column 19 lines 3-9), performing a binding assay (column 6 lines 9-22), and reading the biopolymeric array (column 7 lines 44-57). The result of the reading is obtained and transmitted to a remote location (column 8 lines 46-59).

While Miller does not disclose the manner in which the substrate should be modified, Miller teaches that the modification step must remove particles from the substrate (column 57 lines 3-7). Ronay discloses a method of modifying a substrate surface by contacting the surface with a non-acidic fluid such as ethanol (column 4 lines 3-9) comprising synthetic-polymer particulates called polyelectrolytes (column 2 lines 43-60) and ultrasonically agitating the particulate-comprising fluid to modify the substrate surface (column 5 lines 12-29). The particles have a size within the nm range (column 2 lines 24-42) and are used in a concentration of 0.02%-2.0% by weight. The particulates have approximately the same specific gravity as the fluid since Ronay does not teach stirring the composition. The particles are elastic in that each travels towards the substrate, binds to a debris particle on the substrate and then moves away from the substrate in repulsion (column 2 lines 24-42). Ronay teaches that this method is particularly useful with glass in surface preparation for coating and electroplating (column 5 lines 12-39).

Ronay provides a method for removing particles from a substrate surface. This method removes particles from the surface (column 5 lines 12-39). It would have been obvious to one of ordinary skill in the art to combine the Miller method of producing a biopolymer array with the Ronay method for removing particles from a substrate surface

in order to remove unwanted particles from the array surface and to gain the additional advantage of removing contaminants that could interfere with the assay results.

8. Claims **1-3, 9-16, 18-21, 24-25, 27 and 29-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (USP 5,418,136) in view of Kodera (JP 58048682 A). With respect to claims 12-13 and 30-36, Miller discloses a method for producing a biopolymeric array comprising modifying the substrate (column 57 lines 3-7) and producing an array of probes on the modified substrate (column 29 line 28 – column 30 line 8). Miller teaches producing the array on glass (column 4 line 18-column 5 line 9) that is laser-scribed (column 19 lines 3-9), performing a binding assay (column 6 lines 9-22), and reading the biopolymeric array (column 7 lines 44-57). The result of the reading is obtained and transmitted to a remote location (column 8 lines 46-59).

While Miller does not disclose the manner in which the substrate should be modified, Miller teaches that the modification step must remove particles from the substrate (column 57 lines 3-7). Kodera teaches providing a fluid comprising insoluble particles then adding the substrate to the fluid then ultrasonically agitating the fluid (abstract). The particles are made of silica. The fluid may be acetone, trichlene, fuming sulfuric acid or fuming nitric acid (abstract).

Kodera does not expressly teach using a basic fluid nor does Kodera discuss removing laser-scribed glass particles. However the selection of a fluid with a certain pH is a result-effective variable. In re Boesch, 617 F.2d 272, 205 USPQ 215

(CCPA 1980) teaches that optimization of a result-effective variable is ordinarily within the skill of one in the art. A result-effective variable is one that has well-known and expected results. Varying the pH of the fluid has the well-known and expected result of reacting with certain elements or compounds in order to remove them from a surface. Therefore, it would have been obvious to one of ordinary skill in the art to meet the basic pH requirements of claimed particle-comprising fluid by modifying Miller and selecting a fluid with a basic pH in order to remove the laser-scribed glass particles from a laser-scribed glass substrate.

Kodera provides a method for removing particles from a substrate surface. Kodera teaches that this method removes contaminants from the surface (abstract). It would have been obvious to one of ordinary skill in the art to combine the Miller method of producing a biopolymer array with the Kodera method for removing particles from a substrate surface in order to remove unwanted particles from the array surface and to gain the additional advantage of removing contaminants that could interfere with the assay results.

9. Claims **1-2, 4-6, 9-12,14, 19, 21, 32 and 37-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (USP 3,997,358) in view of Vernon (USP 3,866,398).

Taylor discloses an improved method for removing laser slag and debris from the surfaces of laser scribed substrates by tumbling the substrate with insoluble particles such as glass or metal beads (column 1 lines 54-68). This method is particularly

effective on glass surfaces when used with metal beads (paragraph bridging colums 3-4). Taylor teaches that a washing and rinsing step is needed after tumbling the substrate with the particles (column 2 lines 55-63). The beads are approximately 0.100 -0.110 inches in diameter, or approximately 2500-2800 microns (column2 lines 41-45; column 3 lines 22-25). Taylor teaches using 100-200 beads per 6000 die of 500 square microns (column 2 lines 41-45), which is a particulate concentration of 1-3%. The particulate materials, glass and metal, both have elastic properties.

Taylor does not expressly disclose placing the particles in a fluid. Vernon teaches a prior art method of removing laser debris from a laser-scribed substrate surface, said method comprising contacting the surface with water and ultrasonically agitating the fluid in contact with said substrate to remove laser debris from said substrate surface (column 1 lines 26-30).

Taylor's cleaning process involves three steps: tumbling, washing and rinsing, which can be time consuming and inefficient in the already multi-step process of substrate manufacturing. Therefore, it would have been obvious to one of ordinary skill in the art of cleaning substrates to combine the washing step of Vernon with the particulate method of Taylor to gain the advantage of hastening the substrate cleaning process by combining steps and to gain the additional advantage of ensuring complete removal of all of the debris in that one step. Vernon's substrate is made of silicon while Taylor's substrate surfaces are made of metal or glass. To gain the benefit of ensuring that the laser debris will be effectively removed from a variety of substrates in one step,

it would have been obvious to one of ordinary skill in the art of cleaning substrates to combine the washing step of Vernon with the particulate method of Taylor.

It is possible one of ordinary skill in the art would not have modified Taylor in a way that involves the order of first providing a fluid comprising insoluble particles then contacting the substrate surface with that fluid. If that were the case, it would have been obvious to change the sequence of adding ingredients. In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) teaches that selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. Taylor teaches first contacting the substrate with particles, then contacting the substrate with fluid that inherently contains particles. Vernon teaches ultrasonically agitating the substrate in a fluid, which inherently contains particles. Combining the particles of Taylor and the fluid before contacting the substrate with the fluid would have been obvious to one of ordinary skill in the art in view of Taylor and Vernon because it would simply have been a change in the order of process steps. Taylor and Vernon teach that their methods remove laser-scribe debris. Since that is the result of the instant application, no new or unexpected results are present and the change of order of process steps would have been prima facie obvious.

Taylor does not disclose particles having a size of 15 nm to 500 microns. While Taylor teaches using 1-3% concentration of particles, Taylor does not disclose a volumetric concentration of particles. The size and volumetric concentration of particles are result effective variables and it would have been obvious to one of ordinary skill in the art at the time of invention to optimize these result effective variables. Since 1976

and 1977 when the Vernon and Taylor patents issued, commonly used lasers and substrates have become smaller. Therefore, it would have been obvious to one of ordinary skill in the art to use smaller particles (and a finer mesh basket) in order to access the smaller debris produced by the smaller laser commonly used today. In addition, it would have been obvious to one of ordinary skill in the art to maintain a concentration of particles in volume that is similar to or greater than the numeric concentration of particles disclosed by Taylor in order to ensure removal of the debris in the fluid of the combined method.

10. Claim **7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Vernon and Taylor as applied to claim 1 above and further in view of Dalton (USP 4328,047). Vernon and Taylor not disclose the frequency at which the particulate-comprising fluid is agitated. However, it is well known to those of ordinary skill in the art that the typical ultrasonic device agitates at a frequency of 80 kHz (Dalton column 2 lines 34-36). Therefore it would have been obvious to one of ordinary skill in the art to agitate the particulate-comprising fluid at approximately 80 kHz.

11. Claims **8 and 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Vernon and Taylor as applied to claim 1 above, and further in view of Rupe (USP 4,116,851). Vernon and Taylor do not disclose particulates having a specific gravity substantially the same as the fluid. It is well known to those of ordinary skill in the art that when insoluble particles have approximately the same specific gravity as the fluid,

the particles will remain suspended in the fluid (Rupe column 6 lines 25-34). It would have been obvious to one of ordinary skill in the art to modify either the fluid or the particles so that they would have substantially the same specific gravity to gain the advantage of the particles remaining suspended in the fluid.

Response to Arguments

12. Applicant's arguments, see Applicants' Amendment, filed November 27, 2006, with respect to the rejection(s) of claim(s) 1-39 under Scheerder, Vernon, Ronay, Lin, Taylor and Miller have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Miller and Ronay, Miller and Kodera and Taylor and Vernon.

13. Applicants argue that Ronay does not teach a fluid comprising insoluble synthetic polymer. Applicants correctly state that Ronay teaches that the polyions are soluble in polar solvents. Since Ronay does not state the polyions are soluble in non-polar solvents, Ronay implies that the polyions are insoluble in non-polar solvents. Therefore, in non-polar solvents, Ronay meets the claim language because they are insoluble particles in non-polar solvents.

14. Applicants argue that Taylor teaches away from ultrasonically agitating fluid. Examiner disagrees with Applicants' interpretation of Taylor's language in column 2 lines 18-23. Examiner interprets that sentence as saying that using only one step such as washing in ultrasonically agitated fluid does not effectively remove the slag and

droplets that are formed in the molten state. In that sentence, Taylor does not eliminate the possibility that ultrasonic agitation combined with the glass beads would be effective nor does Taylor teach away from using ultrasonically agitated fluid in combination with the glass beads.

15. Applicants argue that to modify Taylor by using fluid would require using a solid basket instead of a wire basket, thereby removing an integral component of Taylor's invention. Examiner disagrees with Applicants' analysis and does not believe that one would have to use a solid basket. Taylor impliedly teaches a collection unit to collect the fragments coming off the die. It would be obvious for one of ordinary skill in the art to simply use a collection unit large enough to hold the basket and the amount of fluid needed to wash the die.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keri A. Moss
Examiner
Art Unit 1743

KAM 2/19/07

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